Massachusetts Institute of Technology
Instrumentation Laboratory
Cambridge, Massachusetts

AGC Programming Memo #26

TO: Distribution

FROM: D. Eyles

DATE: June 2, 1967

SUBJECT: Sines and Cosines of CDU's

In the interests of avoiding ambiguity , Y Z X has been ordained as the standard, sanctioned order for sines and cosines at SINCDU and COSCDU. Routine CDUTRIG has thus been changed to store sines and cosines in the order Y Z X. Formerly, the vector transformation routines *SMNB* et al used the sines and cosines in the order Y Z X while the routine CDUTRIG computed and stored them in the order X Y Z.

The changes immediately consequent will have been made by the time this memo appears; however, in this connection certain general practices ought to be urged on users:

(1) When a particular sine or cosine is desired, to call it by name, e.g., SINCDUX rather than SINCDU +4. Accordingly, the following tags have been defined:

SINCDUY = SINCDU
SINCDUZ = SINCDU +2
SINCDUX = SINCDU +4
COSCDUY = COSCDU
COSCDUZ = COSCDU +2
COSCDUX = COSCDU +4

(2) Not to assume, without confirmation, that what he has last caused to be put into SINCDU and COSCDU is still there, or that what is there is the sines and cosines of current CDU angles. There exist at least two routines, LEM S40.8 and BALLANGS, which cause other things to be put there.

(3) Since the routine READCDUS can, it appears, be eliminated, to use, when calling *SMNB* et al,

```
        CALL
                CDUTRIG
VLOAD   CALL
        vector
        *SMNB*              (or *NBSM*)
```

instead of, as formerly,

```
        RTB
                READCDUS
STOVL   CDUSPOT
        vector
        CALL
                TRG*SMNB            (or TRG*NBSM)
```

The sequences are exactly equivalent.

Additionally, it is of interest that routine CDUTRIG as a by-product leaves the CDU angles, converted to 1's complement and scaled at 2π, at CDUSPOT, each double precision and in the order Y Z X.